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ABSTRACT

Presented is a report on the computerized record keeping, service accounting, and evaluation system developed for the Lehigh Valley Association for Retarded Citizens (LARC). Described is the purpose of the LARC system, its current status, its development, and a variety of activities associated with its use. The introduction (Part I) provides background information such as the following: a description of LARC, an explanation of a computer information system, applicability to other programs, and benefits to the agency. Part II, "Design of the System", covers the following topics: overview of the design, computer programs, parts (sub-systems) of the information system, and output the computer provides. Defining and quantifying variables is discussed in Part III, which covers information requirements, types of information gathered, and agency use of the information. Part IV, "Implementing the System", includes an explanation of the status of implementation, agency procedures for gathering and distributing information, and processing the data. Parts V through X cover staff involvement and training, utilization of computing facility, comparison with other systems, system revisions, special studies conducted or under way, and future plans for use of the system. Also listed are three working documents developed on the LARC system. (RM)

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EVALUATING THE DELIVERY
OF SERVICES TO THE HANDICAPPED

A description of the LARC SYSTEM,
its capabilities and utilization
as a system for client record keeping,
service accounting and progress evaluation

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The LARC System was developed with the assistance of many people who have given the project their time, energy and support. In the early stages of the project an advisory group was set up. This group met on a number of occasions to review the project's progress. Out of these meetings came encouragement and helpful suggestions. Members of this group are: Charles Brasuell, Northampton County MH/MR Administrator; Allen Deibler, Lehigh County MH/MR Administrator; Shiela McGovern, Planning Director, Lehigh Valley Community Council; Harriett Mantell, M.D., Assistant Superintendent, Allentown State Hospital; Barry Newill, Pennsylvania Developmental Disabilities Planning and Advisory Council; Frederick L. Newman, Ph.D., Special Consultant on Evaluation, Pennsylvania Department of Public Welfare; John R. O'Connor, Commissioner, Mental Retardation Pennsylvania Department of Public Welfare, Northeastern Region; Carl Ohdner, Director Vocational Services, Good Shepherd Home, Allentown, Pennsylvania; Madeline C. Schultz, DD/MR Consultant, Department of Health, Education and Welfare, Region 3.

The Pennsylvania Developmental Disabilities Planning Council provided the funds for the two contracts under which the project was developed. Jack Boyle, Planning Director and Barry Newill, Planning Administrator have assisted and encouraged the project in many ways. Stanley Meyers, Deputy Secretary of Public Welfare for Mental Retardation, Pennsylvania Department of Public Welfare has provided important assistance to and interest in the project. Edward Goldman, Commissioner of Mental Retardation in 1973 gave the project its first hearing at the State level.

At Lehigh University, a number of people have been or are currently involved in the development of the system. Dr. David March did the systems analysis of the computer programs. His technical assistance was invaluable. William Utsch was the computer programmer. Ozgur Yucel was the project's research assistant

in the early stages of the project. Important assistance was provided by Malcolm West who worked as research assistant during the implementation phase of the project. Lella Lerch and Alicia Bauman have also assisted the project in more recent months. Dr. James Green, Dr. Allan Moran and Dr. Lynn Holt provided helpful assistance.

Considerable credit is due the staff of LARC. John Lapidakis, Director, has encouraged and supported the development of the system and Dennis Ridgick has provided important operational support and advice throughout the project. Arthur Mack has also provided valuable aid and support as have Armand Aserinsky and Robert Coad. Special gratitude is due Diane Piripavel who designed and implemented the clerical role in the project. Finally, a special note of thanks is due the entire LARC Staff who have and continue to assist the project in numerous ways. Without their efforts the project could never have reached its present state. It is to be hoped that in the coming months their reward will derive from watching the progress of their clients in a more objective way.

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PREFACE

The present document is a working paper to describe the LARC System and the work done to develop it over the past three years. The intention is to circulate it to those who have indicated an interest in the system's development and operation. Following the completion of the present document a series of publishable papers will be prepared for those who do not desire the degree of detail presented here.

It would be appreciated if those who read the present version would (1) indicate questions not considered or inadequately or not clearly considered and (2) indicate persons to whom a copy of this document should be sent.

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I. INTRODUCTION

This is a report on the development of what is formally titled, "a social service agency record keeping service accounting and service evaluation system". The system was to be developed for the Lehigh Valley Association for Retarded Citizens (LARC). The purpose of the system, which became known as the LARC System, was to improve the efficiency of agency client record keeping and to provide a means for evaluating the effectiveness of agency services. Improved efficiency was to be achieved by systematizing and computerizing key parts of client records. Utilizing these records, studies to evaluate the effectiveness of agency services were to be designed and carried out.

The system was put into operation in July, 1974. At that time accounting for services delivered to clients was begun along with the process of transferring existing client records to the system. At the present time implementation of the record keeping phase of the project has been completed, although some revisions are still being made. Utilizing the data provided by the automated client records, the evaluation phase is now under way.

This report describes the current status of the LARC System, its development and a variety of activities associated with its use. Before proceeding to the details of the report, several background questions will be considered.

A. What does LARC do?

The Lehigh Valley Association for Retarded Citizens (LARC) is a nonprofit organization licensed through the Pennsylvania Department of Public Welfare. LARC has two programs, the Kurtz (adult) Training Center and the Child Development Center (CDC). Both are housed in modern, well-equipped physical plants, centrally located between Allentown and Bethlehem, Pennsylvania.

CDC accepts children from infancy through 8 years old with all types of mental handicaps for a program specially designed for growth and development.

Each child receives a comprehensive evaluation of needs, limitations, and potential, as well as an assessment of the family situation. The child's individual program is determined and executed by a professional staff with expertise in early child development. In addition to staff services in psychology, occupational therapy, case work and special education, CDC has consultant specialists in pediatrics, neurology, speech pathology, audiology and psychiatry. Individualized programs are implemented in clients' homes, in appropriate community agencies, in the CDC itself, or in some combination. CDC served 109 children during 1974-75.

The Kurtz Training Center is a comprehensive vocational rehabilitation facility that provides work evaluation and training for any individual over the age of fifteen who cannot successfully adapt to the demands and realities of business and industry. The program provides an assessment of a trainee's abilities and needs and formulates a plan of training designed to make him or her a productive citizen. In addition to work skills, the client will hopefully acquire self-confidence and a greater degree of independence. The program is carried out under the direction of a professional staff, in an industrial setting, in which the trainees earn wages according to their productivity. Although programs are individually tailored, a typical plan will afford the client comprehensive diagnostic and vocational evaluation, counseling service, social case work, vocational training and job placement with continued supervision. Kurtz served 257 adult clients during 1974-75.

LARC also has innovative programs such as the Community Adaptation program and the Residential Program. The purpose of the former is to increase the level of independent functioning of severely retarded adults by establishing them as members of the community, rather than total dependents of an institution. The Residential Program is two-fold. For those individuals who are capable of taking care of themselves and desire to move into the community, or whose home si-

tuation is such that independent living is required, the staff assists these individuals in securing a place to live, helps with setting up a budget, etc. Individuals who require a more structured living circumstance are evaluated for LARC's Group Home program. The emphasis in the group home program is geared toward the client progressing to adequately grasp fundamentals in banking, self-care, budgeting, marketing, etc. so that in the future these individuals will be able to move into an independent, apartment-living situation.

B. What is a computer information system?

Technically, the LARC System is a computerized information system. In simple terms this means an automated filing system where the computer places specific pieces of information in specified locations in the computer and when requested to do so can reproduce the information, generally in printed form. When such a 'filing system' is joined to the computer's capability to tabulate the frequency of specified pieces of information or to do other types of analyses, the result is a system which can both store information and provide quantitative analyses of what is being stored. While some computer information systems are very complex in their design, the LARC System is relatively simple. This is because such a system is, on the one hand, adequate to the need and, on the other, is less expensive to build and to run. In thinking about the system to be described one might think of it as a large filing system with four major sub-files (sub-systems) into which is placed information relevant to each sub-file and out of which come reports of the information in those sub-files. The contents of these sub-files will be described in more detail below.

C. What is evaluation research?

Evaluation research involves identifying the effect of a particular program on a group of individuals presumed to be influenced by the program. For example, a course in mathematics is supposed to improve the mathematical skills of those who take the course. Evaluation research would be used to determine

whether in fact improvement occurred. The prototype evaluation design is the so-called "before-after" design. That is one that assesses some issue before a program seeks to change an individual or group and then assesses the same issue after the program is complete. The effect of the program is the difference between the assessment before the program and the assessment after it is complete.

There has been considerable interest nationally in evaluating programs in the fields of health, education and welfare. However, this interest has rarely been translated into actual research. There are many technical and operational reasons for this; most center on difficulties of obtaining information (data) that is relevant to and adequate for evaluative purposes. There are various reasons for this lack among which are:

- (1) Inadequate definition of objectives: to evaluate a program it is essential that the objectives of the program be clearly defined;
- (2) Lack of technical research skills: these are needed to assist in conducting the evaluation;
- (3) Staff concern about evaluation: there is a lack of inclination to get into an area in which staffs generally have little experience and around which there can be considerable anxiety.

The description that follows indicates how these and other problems associated with social service evaluation were encountered and in varying degrees resolved.

D. Is the LARC System applicable to other programs?

The LARC System was designed for use in social service agencies in general and in programs for the mentally handicapped in particular. This has been

achieved by developing information storage programs which can accommodate, with only a minimum of restrictions, whatever variables an agency may wish to include and by employing a model of evaluation research which is simple and basic as far as research design is concerned. The general strategy was to develop and test the system in a single agency, then to expand its application to other agencies. Currently, while continuing to test the utilization of the system at LARC, implementation of the system in a five-agency child abuse program is under way and its implementation in an eight-agency drug and alcohol program is under consideration. Thus, the assumption that the system does have broad applicability is being born out.

E. Can the system provide cost-benefit analyses?

The LARC System is designed to provide an accurate accounting of both services provided to each client in an agency and of other 'non-client related' activities of staff. Such information is considered the 'missing link' in computing cost-benefit analyses. Agencies seldom have a day by day accounting of services provided to a client. By contrast, fiscal accounting procedures and data in most agencies are relatively precise. In planning the system the intention was to provide for the capability to relate service accounting data to fiscal data but not to implement that phase initially. At the present time, plans for the addition of a fiscal data file have been developed and their implementation awaits only the availability of funds to do so.

F. What are the benefits to the agency?

Benefits to an agency deriving from the implementation and operation of the system are of two types. One type is associated with the implementation and involves a clarification of the agency's operation. Specifically, it requires clear definition of program objectives, clear identification of types of services delivered to clients and the identification of important client character-

istics, that is, important in the sense of requiring consideration when developing and conducting a program of services for a client.

The second type of benefit derives from having the system in operation.

For example:

- (1) Information on each client has been systematized and is readily accessible to provide, for example, an annual report on all client information in the system.
- (2) Staff attention has been focused on progress evaluation. This means dimensions along which progress occurs have been defined and staff can review this data and consider how and why progress occurs.
- (3) The ways in which the available block of staff services is being used can be examined.
- (4) Administrative decision making is facilitated.
- (5) A plan of routine client evaluations can be implemented.
- (6) There can be routine monitoring of significant events in clients' activity in the agency e.g. when a client reaches the age of 21.
- (7) There is the capability to answer routine and/or specific questions for funding boards.

G. What is the role of the research team?

The research team that developed the LARC System is from the Lehigh University Center for Social Research, working in conjunction with the Lehigh University Computing Center. The work is directed by a social psychologist whose specialty is measurement and research design. The initial task of the research team was to design and implement the information gathering procedures. When this phase of the work was completed, attention was turned to gathering data using the newly designed instruments. At this stage the work of the agency's

research coordinator was critical. As work progressed, the research team's direct involvement in managing the information system was reduced and attention was directed to utilizing the data to examine relevant topics of research and evaluation. The goal is for the basic operation of the LARC System to be carried out with little or no assistance from the research team. However, special applications of the system or of data from it will continue to require technical assistance from the research team.

H. How did the LARC System begin?

Work on the LARC System began in 1971. This activity was stimulated by an earlier interest in conducting research which would enhance understanding of factors influencing the development of handicapped children and adults. This early work involved several projects. In the children's program two studies were done. One compared the social development patterns of children whose fathers were in the home to those of children whose fathers were not in the home. The other examined variation in rates of development of children with different types of developmental handicaps. In the adult program three studies were done. One study utilized a sociometric analysis of clients to determine the quality of social interaction in the sheltered workshop. Another study compared the effects of different systems of reward on clients' performance in the workshop. A third studied workshop instructors' "styles" in relating to clients and their effect on clients' performance in the workshop.

A report on these projects was presented at a Mental Health and Mental Retardation Conference on Evaluation conducted by the Office of Mental Health and Mental Retardation, Pennsylvania Department of Public Welfare in Harrisburg, PA on December 6 - 8, 1972.

A major problem in conducting each of the projects was the difficulty in obtaining relevant background data on clients. Client records were very com-

plete (a point noted by certification teams). However, even when data involved only a few items, the amount of time required to locate it in the agency's records was prohibitive - up to 30 or 45 minutes. From this experience it was apparent that in order to do research, information in client records would need to be more readily accessible.

After several months of consideration the decision was made to develop a systematic client record keeping system. Such a system was a major task, a research project in itself. However, the undertaking seemed worthwhile, particularly if it could also provide a more adequate system of reporting the characteristics of the agency's clientele. This latter issue, as it turned out, was proving to be a major problem for the agency's administrative staff.

The possible availability of systematic client records raised the further possibility of developing a method for evaluating the effectiveness of services in achieving goals set for clients by agency staff. The latter was potentially the more significant aspect of the proposed project, particularly if such data could be gathered on a regular basis. This potentiality in turn led to consideration of an automated (computerized) information system.

The description which follows details the development of the "LARC System" as the project soon came to be called. The system is agency based in the sense that it is oriented to the information needs of agency operations and has the objective of evaluating agency programs. The approach is in contrast to systems which draw information from a large number of agencies (e.g. statewide systems) and which are generally operated by coordinating or funding agencies. It is believed that such a system can service both the agency's need for information and that of coordinating, funding and regulatory agencies. Furthermore, two problems faced when coordinating or similar agencies develop their own systems can also be solved. These problems are the questionable reliability of data

provided by local agencies to coordinating bodies and the difficulties coordinating agencies have in providing useful feedback to local agencies.

Much of the work on the LARC System has been experimental in seeking to evaluate the effectiveness of services provided to clients. Few social service evaluation systems of any type have been developed. Thus, most of what has been developed in the LARC System was done without the experience of others as a guide. Again, the problems are more those of application than of theory. The general "model" for evaluating service delivery has been known to social scientists and educators for several decades (e.g. Solomon, 1949; Campbell, 1957; Suchman, 1967). However, instances in which this model has been applied to social service delivery are rare.

Here, too, the relationship between an individual agency and coordinating or funding organizations is at issue. Almost without exception the latter organizations request 'evaluation' data from local agencies. Obtaining such data is often mandated by governmental bodies. However, the agencies are simply unable to meet these requests in any true sense of evaluation. They have none of the important ingredients for doing evaluation: a plan or model, the technical assistance needed to implement the plan and the time and money to carry it out. As a result, there is a serious impasse.

The discussion which follows is intended to describe the experience of designing, building, implementing and using the LARC System. The description of the system's design involves a general plan or model for evaluation. The details of the implementation outline, on the one hand, the technical assistance that was provided and, on the other hand, the aspects of the project that were carried out by the agency staff. The issues of time and money to conduct evaluation are considered at various points in the discussion.

There are also descriptions of technical aspects of the computer system

where these are important for understanding the procedures that were implemented. However, these descriptions are not technical in the sense that a computer programmer or systems analyst will find the details they need to understand the system. Such details are being documented elsewhere.

It is hoped that this document will do justice to the LARC System and will also provide a helpful overview of the system to those who may be interested in similar undertakings.

II. DESIGN OF THE SYSTEM

A. Overview of the design

The focus of the LARC System is monitoring the progress of agency clients and accounting for services provided to clients for the purpose of achieving progress. Services are accounted for by agency staff recording in detail the amount of time they spend with each client. The strategy for determining progress is for staff to rate a client's status at a given point in time (i.e. current status) and then to specify the level that a client could be expected to achieve (i.e. "goal" or potential status). As periodic re-assessments of current status are done, "progress" can be followed either relative to any prior rating of a client's status or relative to the goal. The relationship between progress (or lack of progress) and services delivered can thus be examined. This relationship can be further examined in light of any information on a variety of client characteristics also provided in the system.

For example, Client A has shown three units of progress over the past six months and Client B has shown six units of progress. Furthermore, Client A received one-half the sheltered workshop instruction that Client B received. One interpretation of this result could be the more workshop instruction the greater the progress. Another situation could be as follows: Client C has made two units of progress and Client D has made four units of progress. Both have received the same amount of service. Why the difference in progress? It is found that Client C has a more severe intellectual handicap than Client D. One interpretation of this result could be that when the intellectual handicap is more severe additional service is needed to achieve the same amount of progress as can be achieved with less service to the less handicapped.

The LARC System includes information needed to examine questions such as those in the examples. The system is divided into four major parts which contain the different types of information. The first part holds background/intake

information. The second part holds information related to progress assessment. The third part of the system holds service accounting information. A fourth part holds what are referred to as experimental ratings. This part was included to provide a capability for storing information needed on an 'ad hoc' basis. Figure 1 depicts the overall system with its four sub-parts.

B. Computer programs

The computer programs needed to examine questions such as those in the examples store and maintain client information but are independent of that information. That is, the programs are designed so that information different from that needed by LARC could be maintained on the system. The only restraint is that the type of information correspond to each of the four parts described above. This means that the background information could be different, the service accounting categories different, the progress evaluation dimensions different or the experimental ratings different. However, generally speaking, background data could not be stored in the service accounting part. There is further flexibility in that as the system is currently being used variables can be added to the system if there is a need to do so. Thus, were additional progress evaluation dimensions identified there is space in the system to add them.

The system does not contain elaborate statistical analysis capabilities. Those it does contain involve the computation of averages (or means) and frequency counts or tabulations of background characteristics. There are several reasons for this design. First in day to day operations agencies do not need elaborate statistical analyses. When they are needed, most computing facilities have a variety of statistical analysis programs. Furthermore, it was not clear what statistical analyses would be most useful. Thus, to avoid extensive programming it was decided to omit elaborate statistical capabilities and to use existing statistical programs. To implement this decision, a means for obtain-

OVERVIEW OF THE LARC SYSTEM

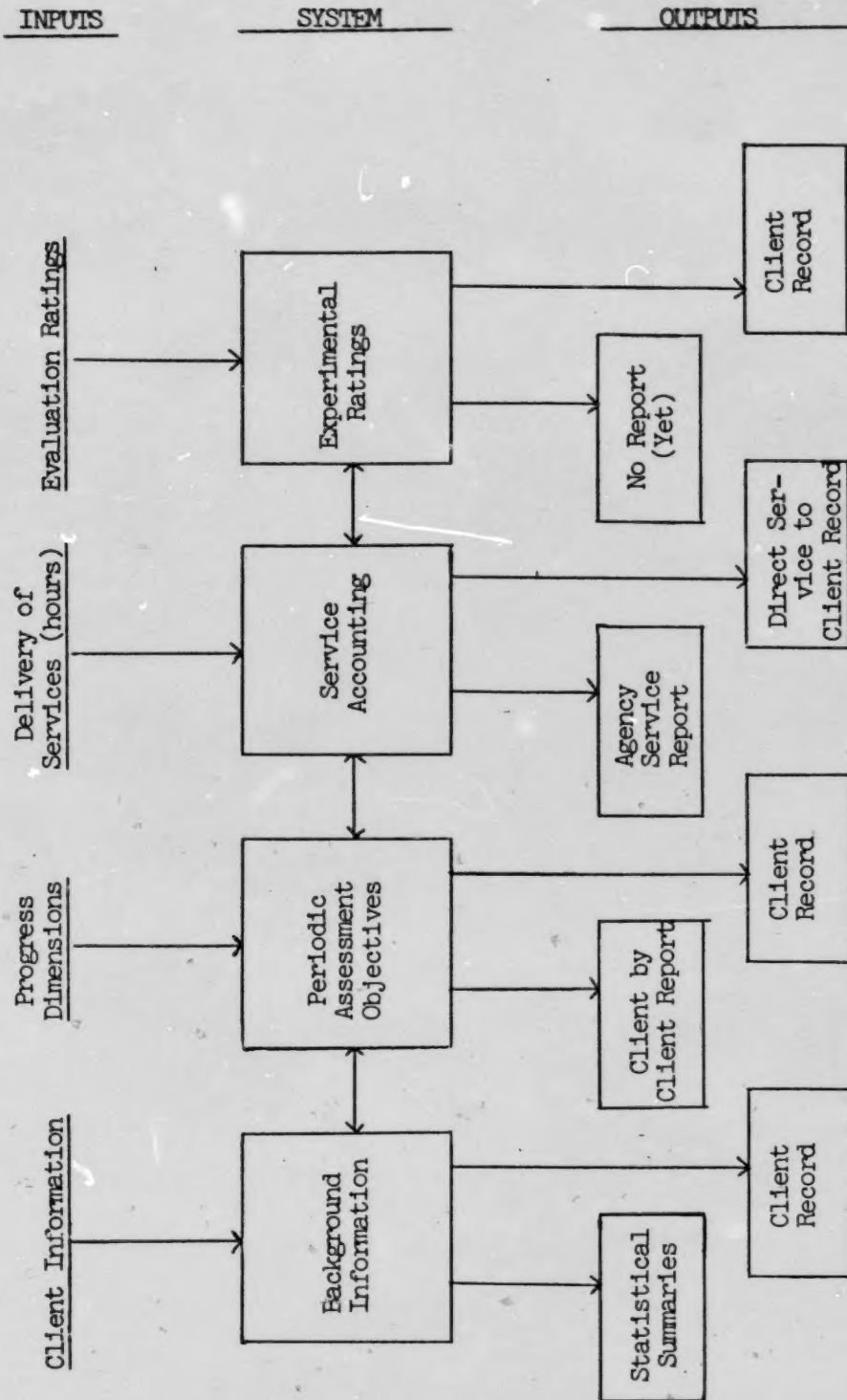


Figure 1

ing data from the system for analysis by statistical programs was described so that all or part of the data can be put on computer cards or magnetic tape.

These are in turn used as data in the statistical analysis programs.

Currently, data for a full year's operation, including both child and adult clients, is being analyzed using the statistical programs of SPSS (Statistical Package for the Social Sciences). Results of these analyses are being prepared in separate reports.

C. Parts (sub-systems) of the information system

1. Background/Intake sub-system

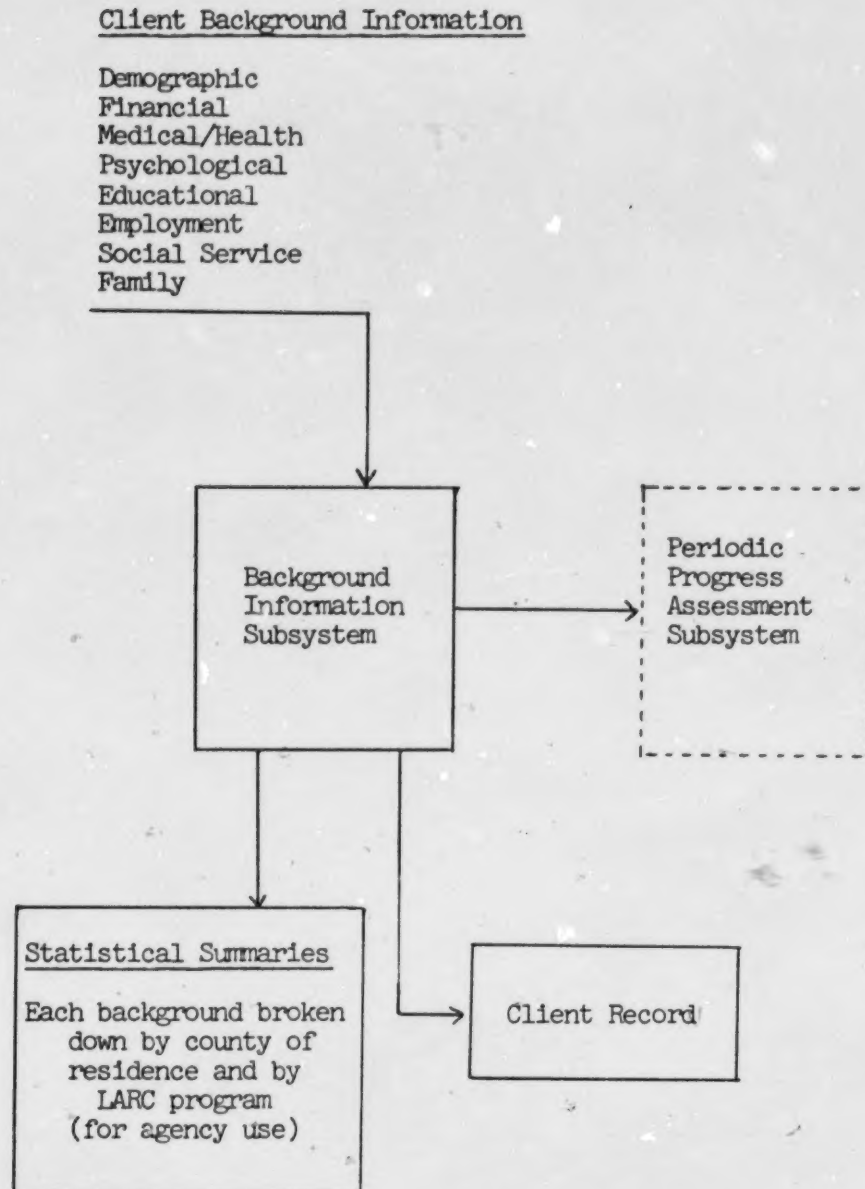
The background information sub-system is designed to store information on a client, such as that gathered at intake. The actual information involved at LARC is listed below (Table 1, page 36). This information is usually gathered during the intake phase and is put into the system when the intake process is complete. Once in the system, information can be added to or changed as desired. Generally, the information stored in this part of the system does not change frequently. A client by client report of this information is provided by this part of the system as well as limited statistical summaries. These outputs are described below. Figure 2 depicts this part of the system.

2. Progress evaluation sub-system

The progress evaluation portion of the system stores information for assessing a client's progress along dimensions relevant to the agency's program. There are thirty-one dimensions for adult clients and twenty-nine for children. These are listed in Table 2 below (page 39).

These ratings are used in two ways. One is to rate a client's current status. The other is to rate the goals for a client. The latter is a projection or estimate by staff of the level on each dimension which it is believed the client can achieve. This is the "goal." The client's progress is then monitored by following progress toward the goal. The monitoring involves re-rating current status from time to time. If desirable, goals can be re-set

Figure 2: BACKGROUND INFORMATION SUBSYSTEM



periodically as well.

The evaluation part of the system stores the repeated ratings of current status and the ratings of goals. A report of these ratings is provided by the system. No statistical analyses are done on these ratings by the system; rather analyses are being done on an ad hoc basis. (See list of working documents, page 63.)

The system can contain up to fourteen evaluations of an individual client. This makes it possible to chart the progress of the client over a relatively long period of time. The LARC System currently has clients evaluated once every 6 months or whenever there is a program change, although the period of time can be varied. Figure 3 depicts this part of the system.

3. Service accounting sub-system

The service accounting part of the system is designed to store a record of the amount of different types of service provided by agency staff to each client. Six categories of service apply to the children's program. These service categories are medical, occupational therapy, psychological, child life services, case work, and client related supervision. For the adult's program there are ten categories: vocational instruction, work activity instruction, casework, residential services, counseling, vocational evaluation, psychological services, recreation services, medical services and client related supervision. The record is in hours or portions of hours of service. The record is updated monthly. This part of the system also has the capability to maintain a record of the number of different services received by a client outside the agency. It also can maintain a record of a client's absences from the agency's programs. Information provided monthly in printed form by this part of the system is a client by client record of amount of services provided as well as a summary of services provided to all clients. Figure 4 depicts this sub-system.

Figure 3: PROGRESS EVALUATION SUBSYSTEM

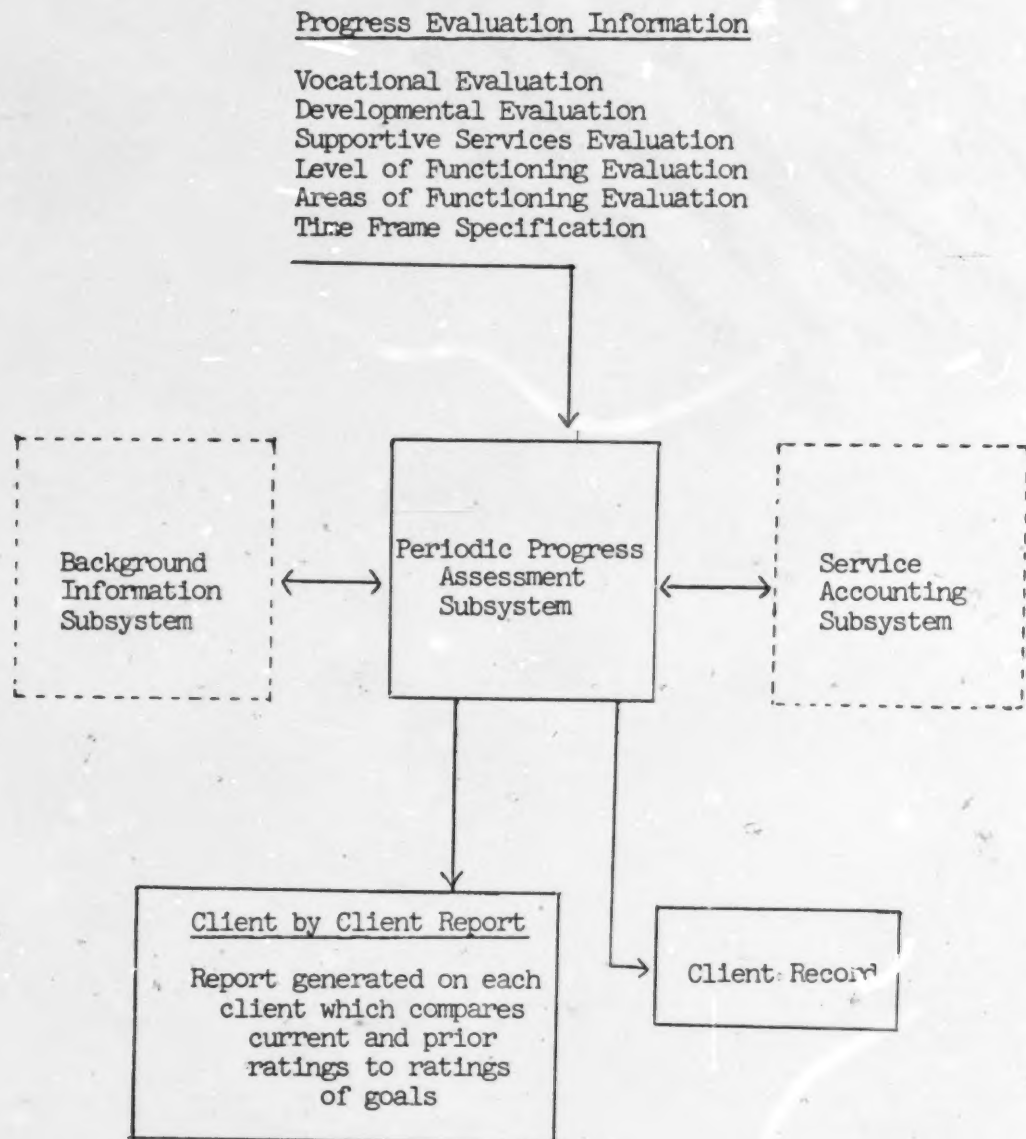
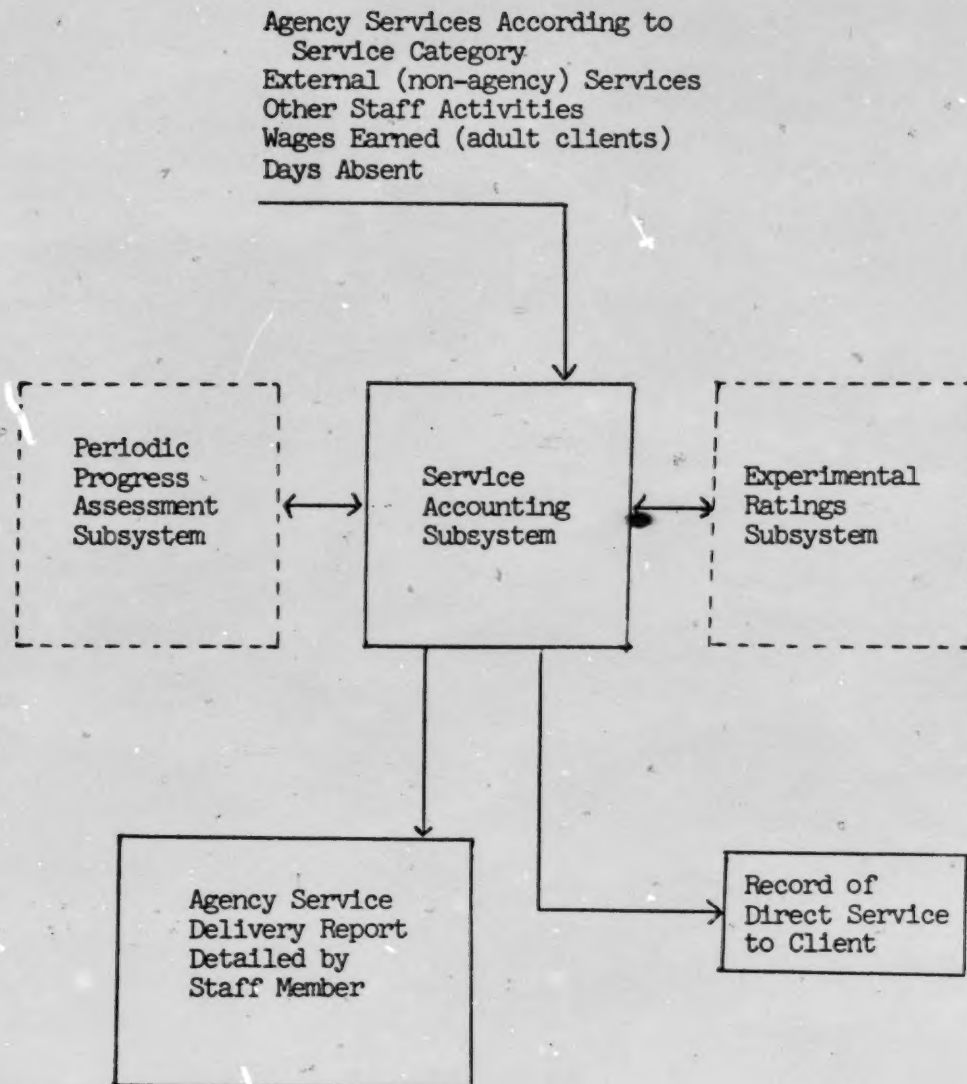


Figure 4: SERVICE ACCOUNTING SUBSYSTEM



4. Experimental ratings sub-system

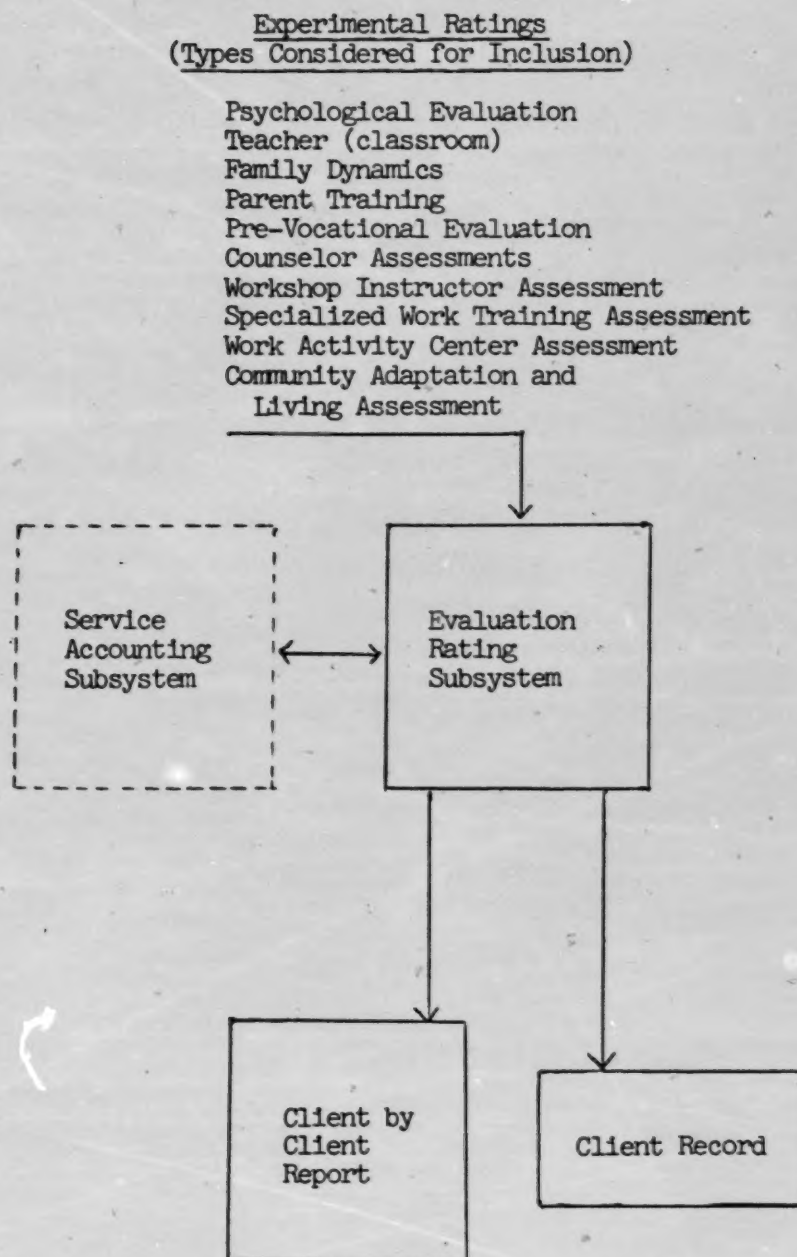
The experimental ratings portion of the system is similar in design to the progress evaluation portion. It can store up to 150 ratings of issues in addition to those contained in the evaluation portion. The rationale for including this capability is that many issues may be relevant to the evaluation process but cannot be evaluated regularly. These can be included here. Also, any issue overlooked initially can be included here. These ratings can be done only once or re-evaluated regularly as desired. Copies of all such ratings are provided in a client by client report. Figure 5 depicts this part of the system.

D. Output the computer provides

"Output" is the printed report of information in the system which the computer system provides on a regular basis or when requested. In developing the system, it was particularly difficult to determine what reports of information would be needed on a regular basis by the agency. One reason was that the agency had four standard reports to prepare; most were ad hoc. Another reason was that being unaccustomed to having such information readily available, it was difficult to identify information that could be used regularly. As a result the information chosen for output reports is simple and intended to provide agency staff with basic information about clients.

Printed reports from the system are broadly in two parts. One is a report of individual client records. The other is service accounting. The client records portion involves individual client records (client status register), statistical summaries (variable code distribution report), service delivery reports (client services received report), and a listing of clients scheduled for evaluation (evaluations due). The service accounting portion has one purpose, to generate a report of services provided by the staff to each client. The following is a description of each of these output reports.

Figure 5: EXPERIMENTAL RATINGS SUBSYSTEM



1. Client Status Register

Each client status register covers three pages and lists all information on file for an individual client. The first page (Figure 6) provides a list of all background and related information on an individual client. This includes psychological and medical information, demographic information, family profile, and other personal information. On this same page the evaluation ratings are listed. The "target date" or anticipated date for achievement of goals is also given. The program to which the client is currently assigned is also on this page.

The second page of the client status register (Figure 7) presents the hours of service a client has received. This is broken down according to categories of service, e.g. vocational instruction, case work service, psychological service, etc. Totals for services are accumulated for the period between two evaluations, for the year to date and since the services to the client began to be accounted for. Services received from other agencies are also presented on this page by number and type. The reason for reporting services delivered between two evaluations is to make it possible to assess the impact of a specific program phase on progress.

The client status register also presents the experimental evaluation for each client (Figure 8). To date these have not been used; but if they were done more than once, each repetition would be listed.

A new client status register for an individual client is automatically printed when information is added to a client's file or whenever one is specifically requested.

2. Variable Code Distribution Report

This report (Figure 9) is a cross tabulation of number of clients, broken down by child or adult status, by county or residence, by service program and then, table by table by key variables of background information in the system.

CLIENT

PAGE 2

CLIENT STATUS REGISTER

DATE 07/21/75

SOCIAL SERVICES DELIVERED

EVAL DATE	AMT EARN	1	2	3	4	5	6	7	8	9	10
PRE-EVALUATION 01/75	00000	957.92	.00	.17	.00	.00	.00	.00	.00	.00	.00
	00000	441.50	.00	.00	.00	.50	.00	.00	.00	.00	.00
YEAR TO DATE	00000	1399.42	.00	.17	.00	.50	.00	.00	.00	.00	.00
TOTAL	00000	1399.42	.00	.17	.00	.50	.00	.00	.00	.00	.00

-23-
32

EVAL DATE	NO ABS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
PRE-EVALUATION 01/75	00000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	00000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YEAR TO DATE	00000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	00000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 7

VARIABLE CODE DISTRIBUTION

RUN DATE 07/21/75

VARIABLE: SEX
PAGE 1

	0	1	2	TOT
NO COUNTY	0	1	2	---

NO COUNTY

CDC PROGRAMS

NONE	0	0	0	0
PROG1	0	1	0	1
PROG2	0	0	0	0
PROG3	0	0	0	0
PROG4	0	0	0	0
PROG5	0	0	0	0
PROG6	0	0	0	0
	0	1	0	1

KURTZ PROGRAMS

	0	1	0	1
NO ENTRIES	0	1	0	1

LEHIGH COUNTY

CDC PROGRAMS

NONE	0	2	1	3
PROG1	0	3	1	4
PROG2	0	11	7	18
PROG3	0	12	7	19
PROG4	0	1	2	3
PROG5	0	0	0	0
PROG6	0	0	0	0
	0	29	18	47

KURTZ PROGRAMS

NONE	0	0	0	0
PROG1	0	3	3	6
PROG2	0	7	6	13
PROG3	0	14	8	22
PROG4	0	19	28	47
PROG5	0	3	5	8
PROG6	0	2	2	4
	0	46	52	100
	0	77	70	147

Figure 9

0 1 2 TOT

NORTHAMPTON COUNTY

CDC PROGRAMS

NONE	0	0	0	0
PROG1	0	3	2	5
PROG2	0	10	16	25
PROG3	0	14	5	19
PROG4	0	1	0	1
PROG5	0	0	0	0
PROG6	0	0	0	0
TOT	0	28	23	51

KURTZ PROGRAMS

NONE	0	0	0	0
PROG1	0	0	1	1
PROG2	0	5	3	8
PROG3	0	21	22	43
PROG4	0	29	19	48
PROG5	0	0	6	6
PROG6	0	4	2	6
TOT	0	59	53	112
====	0	87	76	163

OTHER COUNTIES

CDC PROGRAMS

NONE	0	0	0	0
PROG1	0	1	0	1
PROG2	0	0	0	0
PROG3	0	1	0	1
PROG4	0	0	0	0
PROG5	0	0	0	0
PROG6	0	0	0	0
TOT	0	2	0	2

KURTZ PROGRAMS

NONE	0	0	0	0
PROG1	0	1	0	1
PROG2	0	0	0	0
PROG3	0	0	2	2
PROG4	0	3	0	3
PROG5	0	1	0	1
PROG6	0	0	0	0
TOT	0	5	2	7
====	0	7	2	9

Figure 9 (cont.)

These tabulations can be used for administrative needs such as report preparation and can furnish, when needed, information for the purposes of research design.

3. Client Services Received Report

This report is a summary of services provided to each client in a program (Figure 10). The report includes a cumulative total for the current fiscal year and the monthly average for the fiscal year-to-date.

4. Evaluations Due

This report (Figure 11) provides a list of clients who are due for evaluation (what is referred to at LARC as a six-month assessment) during the following month. The report also indicates clients for whom a re-evaluation is overdue. When a re-evaluation is listed as due a client's most recent progress evaluation is printed out.

5. Staff Services Report.

The service accounting program generates a staff services delivery report (Figure 12). This enumerates by category of services delivered each agency staff member's activity during a month. This report was designed to assist in agency administrative decisions and to provide a major step toward doing cost-benefit analyses.

ADULTS OTHER COUNTIES		CLIENT SERVICES RECEIVED REPORT (FISCAL YEAR TO DATE THROUGH 07/75)										PAGE 22		
CLIENT	-ABS-	EARNING	VOC-IN	MRK-IN	CASE	RESID	HOURS-OF-SERVICE			PSYCH	RECRE	MEDIC	SUPRV	-EXTERNAL- NO SERV-MO
							COUNS	PREVOC						
0	0.0		1201.3	0.0	2.1	0.0	0.0	0.0	0.0	0.0	19.5	0.0	0.0	0 0
0.0	0.0		100.1	0.0	0.2	0.0	0.1	0.0	0.0	0.0	1.6	0.0	0.0	0 0
0	0.0		1650.3	0.0	7.5	0.0	39.5	0.0	0.0	0.0	8.0	0.0	0.0	0 0
0.0	0.0		137.5	0.0	0.6	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0 0
0	0.0		1423.3	0.0	1.4	0.0	0.0	0.0	0.0	0.0	31.5	0.0	0.0	0 0
0.0	0.0		110.6	0.0	0.1	0.0	0.1	0.0	0.0	0.0	2.6	0.0	0.0	0 0
0	0.0		1049.2	96.0	29.6	0.0	15.6	2.4	0.2	0.2	0.0	0.0	1.0	0 0
0.0	0.0		95.4	8.7	2.7	0.0	1.4	0.2	0.0	0.0	0.0	0.0	0.1	0 0
0	0.0		1346.0	0.0	6.7	0.0	47.6	19.4	0.0	0.0	2.3	0.0	1.5	0 0
0.0	0.0		134.7	0.0	0.7	0.0	4.8	1.9	0.0	0.0	0.2	0.0	0.2	0 0
0	0.0		336.0	0.0	9.1	0.0	8.2	6.0	7.3	7.3	4.0	0.0	0.0	0 0
0.0	0.0		112.0	0.0	3.0	0.0	2.7	2.3	2.4	2.4	1.3	0.0	0.0	0 0

TOTAL	0		7006.9	96.0	56.4	0.0	112.5	28.6	7.5	57.7	0.0	2.5	0 0	0 0
AVG	0.0		116.7	1.6	0.9	0.0	1.0	0.4	0.1	0.9	0.0	0.0	0.0	0 0

Figure 10

EVALUATIONS DUE DURING THE MONTH OF SEP
ADULTS

CLIENT	DATE	VOCATIONAL					LAST EVALUATION										SUPPORTIV	LEVEL	09JECT	PROG	CMTY														
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	0						1	2	3	4	5									
	01/10/74	6	7	3	5	5	6	4	6	4	5	1	1	1	3	4	1	1	1	3	0	3	3	4	3	3	02	1	2	2	1	23	2	OVERDUE	
	09/01/74	6	7	3	6	7	7	6	7	4	3	1	5	1	1	4	4	1	1	1	4	0	2	3	3	4	01	1	2	2	1	23	1	OVERDUE	
	10/01/74	6	7	3	4	3	5	4	4	3	4	1	2	1	1	1	2	1	1	1	2	0	3	3	3	4	02	1	2	2	1	23	2	OVERDUE	
	09/01/74	6	7	3	5	5	6	4	6	1	2	1	1	1	3	4	1	1	1	2	0	2	3	3	4	3	02	1	2	2	1	23	1	OVERDUE	
	09/01/74	6	7	3	4	5	6	6	5	4	2	1	4	1	1	4	2	1	1	1	2	0	3	3	3	3	02	1	2	2	1	23	1	OVERDUE	
	09/13/74	7	7	4	7	7	5	7	1	2	1	5	1	1	1	4	1	1	1	4	0	3	3	4	5	4	02	1	2	1	1	23	2	OVERDUE	
	01/10/74	6	7	3	5	5	6	5	4	3	1	2	1	1	1	4	1	1	1	3	0	3	3	4	3	3	03	1	2	2	1	23	2	OVERDUE	
	09/13/74	6	7	3	5	4	6	5	5	2	1	1	1	1	1	4	1	1	1	1	2	0	3	3	4	4	03	1	2	2	1	23	2	OVERDUE	
	09/13/74	6	7	3	3	3	6	5	6	3	4	1	1	1	1	1	1	1	1	1	2	0	3	2	2	2	02	1	1	2	1	24	2	OVERDUE	
THIS CLIENT HAS NO EVALUATION																																			
	12/01/74	5	5	6	5	5	3	3	4	4	1	1	1	1	3	1	1	1	1	1	0	2	2	2	3	3	06	2	3	4	1	24	2	OVERDUE	
	12/01/74	6	7	3	6	6	4	6	4	3	1	1	1	1	4	1	1	1	1	4	0	3	4	2	4	4	04	2	2	2	1	24	1	OVERDUE	
	12/01/74	3	6	3	5	3	3	3	3	5	2	1	1	1	3	4	1	1	1	1	4	0	2	2	4	4	05	2	2	3	1	24	2	OVERDUE	
	12/01/74	6	6	3	4	5	5	3	7	2	3	1	5	4	1	1	1	1	1	1	0	3	3	2	3	3	03	2	2	2	3	1	24	2	OVERDUE
	12/01/74	5	5	3	7	4	5	4	7	1	3	1	1	1	1	1	1	1	1	1	5	0	3	3	4	2	06	2	2	2	4	1	24	1	OVERDUE
	12/01/74	6	6	3	6	6	6	3	7	5	2	1	1	1	1	1	1	1	1	1	5	0	3	3	4	2	05	2	2	2	4	1	24	2	OVERDUE
	12/01/74	3	4	3	4	3	3	3	5	4	3	1	5	5	1	2	1	1	1	1	3	0	2	3	3	4	08	2	2	3	1	24	1	OVERDUE	
	12/01/74	6	5	5	4	4	4	3	3	3	4	1	1	1	2	3	1	1	1	1	0	7	2	3	1	3	07	2	2	3	1	24	1	OVERDUE	
	12/01/74	5	6	3	5	4	4	4	4	2	3	1	2	1	1	1	1	1	1	1	0	4	4	2	3	2	04	2	1	2	1	24	3	OVERDUE	
	12/01/74	5	5	4	4	4	4	4	4	2	2	1	1	1	1	3	3	1	1	3	0	3	3	3	3	3	04	2	2	2	1	24	1	OVERDUE	
	12/01/74	7	5	3	3	7	6	3	7	1	1	1	5	5	1	1	3	3	1	1	0	1	1	2	2	2	03	2	2	3	1	24	2	OVERDUE	
	12/01/74	4	6	3	5	4	4	4	3	4	3	1	1	1	3	3	4	1	1	1	4	3	4	4	4	4	05	2	2	2	1	24	1	OVERDUE	
THIS CLIENT HAS NO EVALUATION																																			
	12/01/74	6	6	3	6	5	6	5	5	3	1	1	1	1	4	1	1	1	1	1	4	4	4	2	4	2	03	2	1	2	1	24	1	OVERDUE	
THIS CLIENT HAS NO EVALUATION																																			
THIS CLIENT HAS NO EVALUATION																																			
THIS CLIENT HAS NO EVALUATION																																			

NUMBER OF EVALUATIONS DUE

NUMBER OF EVALUATIONS OVERDUE

Figure 11

STAFF SERVICE DELIVERY REPORT FOR SEP 1975

CHILDREN - SERVICE CATEGORY 04

STAFF NUM	1	2	3	4	5	6	7	8	9	10	11	TOTAL
		60.00		60.00		4.00						124.00
		72.50		57.50	4.00	6.00						142.00
		324.00			1.75							325.75
	11.00	95.00	2.00	107.50	1.00	9.50						226.00
		258.00			4.50							262.50
		320.00			.50							320.50
				6.75	24.50	27.25						58.50
	14.00		1.92		12.50	4.00	11.50					43.92
					.75							318.75
		318.00										318.00
		318.00										144.00
		140.00										254.16
		225.66		16.50	7.00	5.00						
TOTAL	25.00	2131.16	3.92	248.25	56.50	61.75	11.50					2538.09

Figure 12

STAFF SERVICE DELIVERY REPORT FOR SEP 1975

ADULTS - SERVICE SUMMARY BY CATEGORIES

	51	52	53	54	55	56	57	58	59	71	72	TOTAL
	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	22115.56	3333.26	317.11	1380.00	231.77	42.50	43.83	271.25	3.50	218.75	572.50	
	---	---	---	---	---	---	---	---	---	---	---	---
	73	74	75	76	77	78	79	80	81	---	---	TOTAL
	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	539.00	24.25	1348.75	103.82	73.25	377.09	1357.59	87.67	127.83	---	---	32835.28

ADULTS - SERVICE SUMMARY FOR EXTERNAL SERVICES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Figure 12 (cont.)

STAFF SERVICE DELIVERY REPORT FOR SEP 1975

PAGE 005

CHILDREN - SERVICE CATEGORY 05

STAFF NUM	CLIENT HOURS OF SERVICE BY TYPE											TOTAL
	1	2	3	4	5	6	7	8	9	10	11	
038	8.75	9.00	16.75	75.00	20.75	7.00	7.50	4.75	9.00			150.50
066	8.00	13.50	20.25		22.00	4.25	1.75	4.25	14.00			88.00
099	2.25	15.50	26.75	4.50	16.50	4.75	2.50	2.50	8.25			85.50
TOTAL	19.00	38.00	65.75	79.50	59.25	16.00	11.75	11.50	31.25			332.00

Figure 12 (cont.)

STAFF SERVICE DELIVERY REPORT FOR SEP 1975 PAGE 018

CHILDREN - SERVICE SUMMARY BY CATEGORIES

1	2	3	4	5	6	21	22	23	24	25	TOTAL
10.50	127.42	51.43	2538.08	332.00	37.83	145.17	82.00	235.50	959.80	24.00	
26	27	29	29	30	31						TOTAL
34.25	16.75	323.75	175.50	6.50	79.00						5178.68

CHILDREN - SERVICE SUMMARY FOR EXTERNAL SERVICES

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Figure 12 (cont.)

III. DEFINING AND QUANTIFYING VARIABLES

A. Overview of information requirements

One objective in developing the LARC System was to systematize client records. In general this involved several considerations. One was to define clearly what was meant or intended when referring to a particular piece of information. For example, the specification "parents" required definition to identify the sense in which the word was used, e.g. whether "parents" were foster or adopted and whether they were a client's guardian. Another was to define specifically dimensions related to goals or to clarify definitions of goal dimensions. Furthermore, all variables had to be in quantifiable terms.

Another consideration was to define categories of service. Generally, the question was whether to categorize services by staff type (e.g. caseworker, psychologist, etc.) or by type of activity (e.g. group therapy, workshop instruction, etc.). The decision reached was to categorize services by staff type with a rather specific breakdown of activities under each staff type. The discussion which follows describes the variables in each portion of the system and some of the questions encountered in selecting them.

B. Types of information gathered

1. Background information

An initial problem was to identify which items of background information were most needed by the agency. This was done in two steps. First, the total set of information needed was identified. To do this all staff in the agency were asked to list needed information. Their lists were discussed at length and a single list compiled.

A form for this information was then designed to serve as the agency's client record. This method of information gathering did not work well. The case work staff who bore the brunt of gathering the background information

preferred to gather information in a more general, open-ended manner and then to fill in the items for the information system from interview notes. This latter procedure is currently being followed.

The second step was to determine what sub-set of the total set of information was sufficiently important to be included in the computer information system. This was done by reviewing external reporting needs, reviewing information needed to administer the agency, and determining information which would be needed as part of research activities. Table 1 lists the information that was selected for inclusion in the background/intake sub-system.

The major proportion of the information included in Table 1 is generally accepted as important. Its importance was the topic of a study conducted by the research team and outlined below, page 60. However, the reason for and value of the Intake Worker's Ratings may not be apparent. These ratings were designed to capture the intake worker's impressions of the client and/or the client's caretakers gained during the intake interviews. The intention was to determine if such ratings could be predictive of the degree of progress a client might be expected to make in the LARC program. If there were a predictive potential the agency staff might be able to make better decisions regarding client selection and client programs.

2. Evaluation ratings

In order to identify dimensions for evaluating client's progress, agency staff were also asked to identify the issues along which client progress occurred. The emphasis was on those dimensions which they as staff considered in developing and carrying out programs for clients. A list was developed and discussed, additions and deletions were made where these were felt necessary. Paralleling these considerations, a study of measures developed by other researchers was done. (A report of this study is in preparation. It is outlined on page 61).

TABLE 1
Background Information

General Background

Client code number
County of residence
Sex of client
Date of birthday
Education level of client
Special education completed by client
Most recent occupation of client
Where or with whom client lives
Guardian's relationship to client

Medical Information

Medical Impairment(s) (allows five)
Severity of medical impairment(s)
(allows five)
Immunizations
Number of times hospitalized
Medical pediatric assessment
Hearing assessment
Vision assessment
Orthopedic assessment
Neurological assessment
Psychiatric assessment

Program Related Information*

Date of referral
Referral source
Reason for referral
Diagnosis at referral
Date of intake interview
Date of intake staffing
Staff program phase recommendation
Date of admission
Program designation at admission
Date of termination
Reason for termination

Psychological Information

Psychological impairment(s)
(allows three)
Severity of psychological impairment(s)
(allows three)
No. of times psychological inpatient
Number of times psychological outpatient
Tested intelligence quotient
Clinical estimate of IQ

Financial Sponsorship

Source and date of initial sponsorship
(allows two)
Source and date of current sponsorship
(allows two)

Evaluations

Physical therapy evaluations
Occupational therapy evaluation
Speech evaluation

*Revisions currently being made in the system will provide information on program changes between admission and termination.

TABLE 1 (Continued)

Employment History

Number of years employed
Amount of last earned income

Prior Social Service

Amount of external social service
prior to LARC

Client Background

Ethnic or racial background
Religious preference
Marital status
Military service

Client's Spouse/Children

Education level of spouse
Occupation of spouse
Special education of spouse
Number of children

Client's Family of Origin

Educational level of father
Occupation of father
Special education of father
Date of father's birth
Educational level of mother
Occupation of mother
Special education of mother
Date of mother's birth
Number of siblings
Number living in client's household

Problems Related to Client's Birth

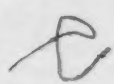
Prenatal problems
Problems during childbirth
Postnatal problems

Family Problems

Number of family members with handicap-
ping medical problems
Number of family members with handicap-
ping psychological problems
Number of family members receiving
social services

Intake Worker's Ratings

Mental health status of (potential)
client
Parent-child relationship
Intelligence of (potential) client
Relationship of client to others in
family
Parent understanding of (potential)
client's problems
Potential of parents to become thera-
peutic agents
General impression of client
Clarity of impression



None of these measures seemed appropriate to the task envisioned for the evaluation ratings. Thus, the final decision was to quantify the issues identified by the staff and to use them for evaluating client progress.

Several problems were inherent in the development of the evaluation measures. One was defining separate measures for the adults and children. Whenever possible, dimensions were defined to be applicable to both age groups. In fact, it was found that as long as the ratings for children and for adults were kept separate many of the rating systems could be applied to both. This occurred largely because current status and goals are set separately. Table 2 gives a list of evaluation dimensions currently in use.

Another problem was the hesitancy of the staff to assess clients using quantifiable rating scales rather than making what might be referred to as non-quantified clinical judgments. Considerable discussion occurred around this question. Staff were requested to rate clients on the dimensions chosen. However, there is continuing staff concern that the rating procedure represents a departure from assessment of the client's "total person". This concern, however, reflects an underlying concern with quantitative evaluation generally.

While work on the rating scales is still in progress, it is evident that reasonably reliable dimensions have been developed. Reports of statistical analyses of data from these ratings are currently being prepared. A brief description of these analyses is given on page .

3. Accounting for service

To develop a method to account for the services delivered to each client, a list of services provided by the agency was developed in discussions with the staff. Services identified were categorized generally by staff role such as case work, psychological services or workshop training. Each service type was then broken down into a set of sub-types. Included in these sub-types is a dif-

TABLE 2
Evaluation Dimensions*

Vocational ability (only adults)	Feeding disorder
Intellectual abilities	Elimination disorder
Physical-medical status	Sleep disorder
Emotional controls	Global behavior disorders
Motivation	Physical environment: home
Degree of individual functioning	Extended environment
Personal appearance and grooming	Therapeutic family unit
Communication skill	Therapeutic peer involvement
Aggressiveness	Professional involvement
Level of activity	Level of functioning
Self abuse	Vocational status (only adults)
Speech handicap	Residential status
Hearing handicap	Developmental status
Visual handicap	Supportive status
Motor handicap	Program assignment
Affective handicap	

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* A set of detailed definitions of the scales for each dimension has been developed.

ferentiation between services provided directly to clients and activities carried out by a staff member but not considered a direct client service. The distinction between "direct" and "indirect" services is considered important since the assumption is made that only direct services further the client's progress. Indirect services are related to the operation and maintenance of the agency. Only direct services are recorded for an individual client while both direct and indirect are accounted for on the Staff Services Delivery Report (described above). Table 3 lists the major service accounting categories.

4. Experimental ratings

As described above the experimental evaluations are to gather ratings of client functioning which are not gathered as part of the progress evaluation ratings. Areas in which these ratings might be developed in the future are, among others, family dynamics, sheltered workshop performance, psychological functioning or community adaptation. Further work on information for this portion of the system will be done as specific research projects are developed.

C. How does an agency use the information?

What are the questions that an agency can or should raise on a regular basis presuming that appropriate information is available and furthermore what information can provide adequate answers? Certain difficulties have arisen when considering these questions. One is that it is difficult to formulate questions when there has previously been no way to answer them in the past. The other side of this problem is that after questions are formulated, sometimes available data do not (or cannot) provide direct answers. There is thus a sizable problem of defining questions and relating available data to those questions.

The second difficulty follows from the first. Considerable staff time, principally administrative staff time, is required to resolve the first diffi-

TABLE 3
Categories of Service Accounting*

ADULTS' PROGRAM

Vocational instruction

KWAC instruction

Casework

Residential services

Counseling

Vocational evaluation service

Psychological services

Recreation services

Medical services

Client related supervision

CHILDREN'S PROGRAM

Medical services

Occupational therapy

Psychological services

Child life services

Case work

Client related supervision

* Each category is broken into a set of subcategories which are not listed here.

culty. This means that a system, designed for its time-saving capabilities, requires an expenditure of staff time and thought to maximize its use. Such a commitment makes sense only on the assumption that the end result of the process will be more effective services for clients.

Another result is essentially definitional. The LARC system has been defined in terms of a classical evaluation model such as that described by Weiss (15) and others. This model is based on the hypothesis that client progress along relevant dimensions is the result of program services rendered to the client. The relationship between services delivered and client progress can be identified when relevant factors and client background are controlled.

The availability of information in the system makes it possible to begin testing this hypothesis. Toward this end, data from the evaluation ratings are being studied to determine their psychometric or measurement properties.

IV. IMPLEMENTING THE SYSTEM

A. Status of Implementation

The process of defining and developing measurement procedures for gathering needed information required approximately a year (September, 1973 - August, 1974). The computer programs were designed in two months during that period and written in the following three. The computer programs were ready for use several months before the first sets of data were available to input. The first block of information input to the system was service accounting. This was done in July, 1974 and has continued in each subsequent month to the present.

The second block of information input to the system was progress evaluation data. This was begun in July, 1974 and by January, 1975 a large majority of clients, both children and adults, had been evaluated once and the data input to the system. The procedure was to complete each client's progress evaluation at a regular staff conference. Such conferences were scheduled to include every client over a six month cycle. Thus, at the end of six months (by January, 1975) each client had been evaluated once, and, at the end of a year (June, 1975), the end of the second cycle was nearing completion. In the third cycle the goals for each client are re-assessed. The evaluation rating data for the period July, 1974 through June, 1975 are currently being analyzed statistically as described below.

The third block of data was background information. The first step in systematizing and transferring this information to the computer system involved conducting intake interviews of new clients using the new questionnaire form. As described above, the questionnaire was modified shortly after the initiation of this step. The second step was to transfer information in client files to the client information form. This latter was done by members of the research staff. The transfer of these records was complete by January, 1975, and by February, 1975 the background information of all clients was in the computer system.

B. Agency procedures for gathering and distributing information.

1. Background information.

During the preadmission phase of a client's time in the agency, information is gathered from external documents and referral records, caseworkers observations, and an extensive intake interview, and combined with staff recommendations and program designation in a client social history. Information for the computer system is then extracted from this history and put into a form covering information needed for the computer system. From this form the data is keypunched by a secretary and submitted for input. In order to assure that the records are kept current, a review of the client's records is conducted immediately prior to each client's six month evaluation.

2. Evaluation ratings.

Evaluations are conducted by members of the staff who have had professional contact with the client during the most recent evaluation. The ratings for a client represent a staff consensus. These ratings are passed on to the secretary who keypunches the ratings directly from the staff assessment form and submits them for the computer run.

3. Service accounting.

Each staff member has an identification number for the purpose of service accounting. On the service accounting form, this staff number, a client's identification number, the general category of service and the type of service are recorded together with the time spent providing the service. If the same service is provided several times for the same length of time the number of times can be indicated, thus avoiding repeated listing. These forms are submitted to the secretary for keypunching and submission to the computer programmer.

4. Experimental ratings

No use has been made of experimental ratings to date. However, these ratings would be done by the staff and submitted for keypunching in the same way as evaluation ratings noted above.

C. Processing the data.

1. How data are put into the computer.

Information gathered by the agency is keypunched onto data cards, and these are then fed into the computer. This is to say, the data are "batch" processed. Several practical considerations dictated this procedure over the alternate method of using interactive remote terminals, that is a system in which data are put into the computer by teletype or some comparable device. The primary reason was that a "batch processed" system can be run periodically and at considerably lower costs than an interactive system. The use of cards also allows for accuracy checks to be conducted prior to entering data to reduce errors and cards can be keypunched at the convenience of the clerical staff. Overall, the approach being used provides a high degree of flexibility at a relatively low cost.

From an operational standpoint, data for a client go into the system in the following manner. When a person is referred to the agency for admission, a member of the agency staff begins the intake procedure. At this point a number is "reserved" for the potential client in the system. The availability of this number in the system makes it possible to begin to account for services delivered to a person prior to admission, whether formally admitted to the agency program or not. As a result the amount of service delivered to persons who are interviewed for admission but not admitted to the agency can be monitored. At the end of the intake process, when background information on the client is available and an initial evaluation and setting of goals has occurred, these data are put into the system. While accounting of services will be accumulated from the time of a potential client's first visit, a client's record is not entered into the system until the background information is available and ratings of current status and goals have been made.

The system has been designed for maintenance by the agency clerical staff. The data are gathered in the agency by a secretary who keypunches it and gives it to the computer programmer for input. While the system is currently "run" by the programmer, due to continuing testing of the system, it is anticipated that with more experience the system can be run by the agency's staff. The procedure for doing this will be detailed in an operations manual that is to be prepared.

The computer programs have been designed so as to minimize the introduction of errors into the system. For example, the system will not accept for a specific variable data that exceeds a maximum value. When errors are found, a message is printed indicating the location of the error. These are corrected by the secretary who has prepared the data and re-submitted to the system.

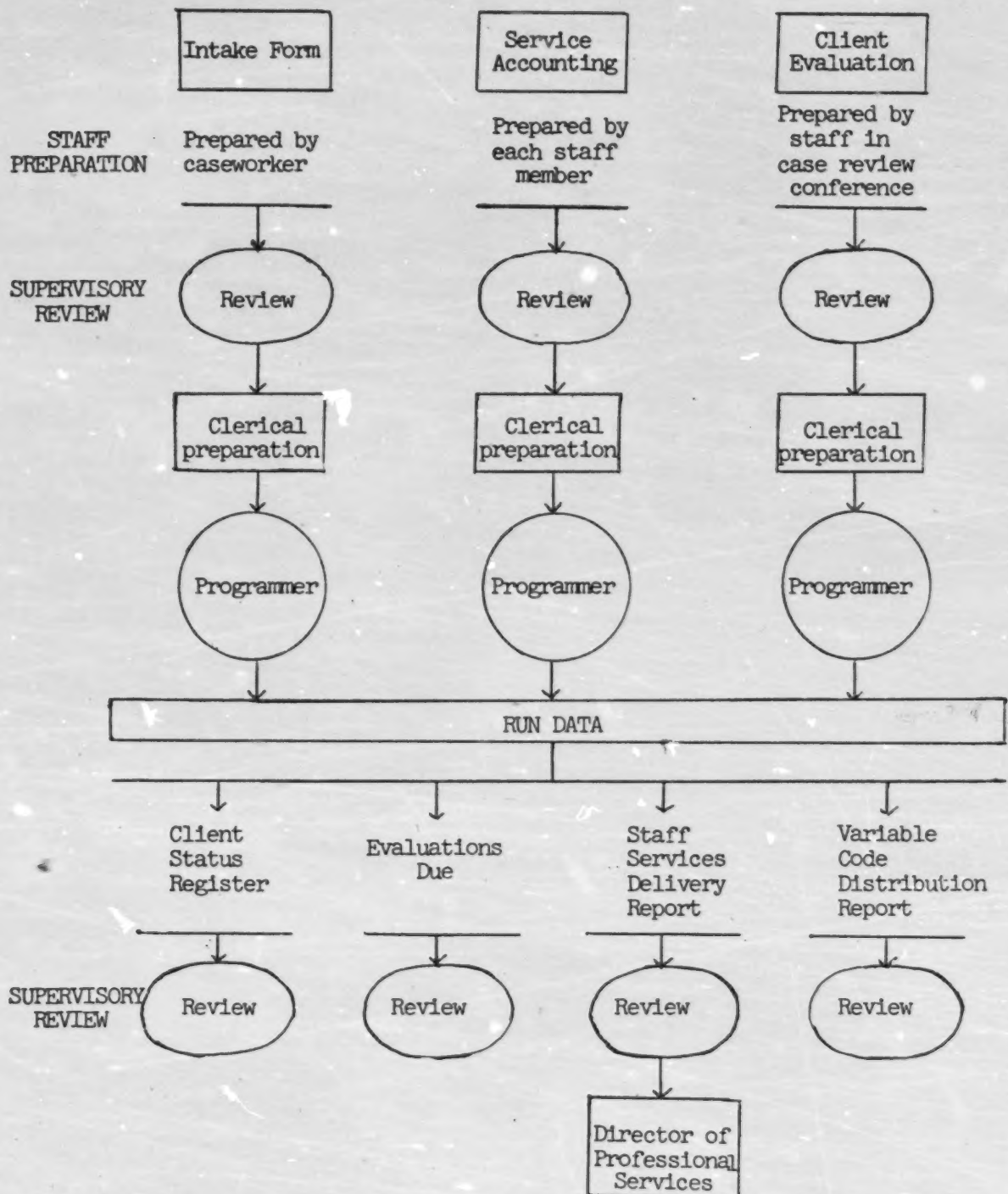
2. Distribution and utilization of output.

Distribution and utilization of output is currently receiving considerable examination. At the present time monthly reports go to the supervisor of psychological services who reviews the results and distributes them to relevant staff. Figure 13 outlines stages in gathering and distributing information in the agency.

3. Adding or correcting data.

A variety of relatively minor problems arose at various stages in the implementation of the system. Many of these concerned the process by which data were to be brought up to date or corrected. For example, as mentioned above, it was found that services were being delivered to clients prior to their being admitted to the agency (i.e. before the intake process was over). A procedure was developed to enter a client's number into the system, thereby reserving information locations and making it possible to enter information on a client as it became available. Another example was the need to correct

Figure 13: STAGES IN GATHERING AND DISTRIBUTING DATA



inaccurate information or to put new information into the system. The procedures developed allow for correcting (or updating) as little as a single item of information.

V. STAFF INVOLVEMENT AND TRAINING

A. Feasibility of staff gathering evaluative data.

Considerable discussion has occurred around the question, should agency staff gather their own evaluative data? Essentially there are two camps on this issue. One says that evaluations should be done by those who do not work for an agency since they can be most objective. The other says that evaluations should be done by those who do not work for an agency since they can be most objective. The other says that it should be done by agency staff who gain in understanding of and sensitivity to their clients to a degree that outweighs whatever is lost in objectivity. A third point of view, a compromise, says that evaluative research can best be done by an agency which has a research unit.

The latter alternative simply seems economically impractical in view of the aim of implementing systems for evaluation in any agency willing to do the work required to set up and operate the system. The alternative of having outside researchers do the evaluation flounders on the same problem of economics. It is costly for an outside group to gather the relevant data. Furthermore, once the outside team departs the agency is left with a report and little else. There is generally no way to conduct continuing evaluation of client progress.

The third alternative, staff involvement in gathering evaluative data, the one chosen for the present project, is more economical and, if successful, will provide an on-going record keeping and evaluation process. Furthermore, the project operates on the assumption that by training staff to make relatively objective judgments, any biasing effects due to their participation in the agency can be minimized.

B. Staff Involvement

From the outset, there was the recognition that to implement the system the general involvement of staff was needed as well as training them in the system's maintenance. This took several forms. Staff reviewed their own needs for information. They helped to define goals for clients. They also helped to develop and to use ratings of client's status on these goal-dimensions. Each of these steps has been a process of both discovery and training. The following describes the activities of the agency's staff in this process.

1. Administrative staff.

The involvement of the administrative staff in all phases of the project has been crucial. Their perception of the importance of more systematic, efficient procedures, and their awareness of the growing pressure for evaluation has resulted in full support for the project from its inception (including a major role in obtaining funding). Their commitment has been both in principle and in practice. Probably the major difficulty that has arisen is around the issue of use of staff time. During the period when the system and its information inputs were being developed, considerable staff time was required to develop procedures which adequately interfaced with existing agency practice. Furthermore, as the project proceeded into the operational phase, there arose questions about procedures to be followed and whether each was essential to the system's operations. Since the project was experimental, the research staff could not give unequivocal answers. The administrative staff were unhesitating in their decisions to try the new procedures.

2. Service delivery staff.

One advantage to designing and developing a system which is agency based is staff participation at each stage of development. It was felt from the outset that to make optimum use of the system, all agency personnel would need to feel a sense of involvement and commitment to the project. For

this reason, a continuing series of staff conferences and training sessions were conducted during the inception and development of the project. Initially, input from staff was solicited to identify the information to be recorded for each client and to define categories of social service. Staff members also provided lists of the possible responses for each item, so that a coding procedure could be established. Training seminars were incorporated into the staff conferences to acquaint individuals with a systematic methodology for information gathering and recording.

In any social service agency, resistance by staff to innovations which provide for greater accountability or which add to the work responsibilities can be anticipated. It was felt that such resistance could be kept to a minimum if adequate feedback were provided from data put into the system. Toward this end, there have been training sessions to help staff to interpret the various computer reports and to make maximum use of the information. One step was to review with staff the information in the system. They were asked what information they used most frequently. Staff were also asked about questions they would like answered about agency programs or about individual clients. Answers to these questions are being reviewed to identify information to be provided to staff.

3. Clerical staff

The intention was to develop a system which could be maintained by the agency's clerical staff. Thus, early in the project meetings were held with the clerical staff to discuss how they would relate to the operation of the system. As the project proceeded, clerical staff were polled to identify a person to handle input to the system. As the implementation of the system proceeded, the person selected assisted in the development of efficient procedures. Currently, this secretary, assisted by a backup secretary, gathers information forms prepared by the professional staff, adds coding

where needed, keypunches the data, and gives the data to a computer programmer who conducts the monthly "run" of the system. When the system identifies errors, the secretary makes corrections and returns the data to the programmer. When the present phase of testing the system is complete, the intention is to drop out the stage of programmer intervention.

VI. UTILIZATION OF COMPUTING FACILITY

A. Planning the system

One objective of the proposed project was to develop computer programs which could be used by different agencies, were relatively simple in conception, were written in a programming language that was widely used and could be run by agency staff. The decision to make the programs "batch", has been discussed above. The Lehigh University Computing Center was the computing facility. The Center has a CDC 6400 computer. The programming language is COBOL, a widely known and used programming language.

The major hurdle in developing the programs was preparing program specifications; that is, making the decisions about what the system will or will not do. To do this, a senior systems analyst was employed and the general characteristics of the system were outlined. The systems analyst then developed the details, posing a series of questions which were answered by the research staff and/or agency staff. The answers to these questions when implemented in specifications represent the actual character of the system. Through this process the characteristics of the system (described above) were detailed.

B. Writing programs.

The writing of the programs according to specifications was done by a programmer in the Lehigh Computing Center. While there were still decisions to be made, particularly concerning the form of the printed output, the programming went smoothly and was finished prior to finalization of information to be put into the system. The programmer has continued to work on the project and made revisions as they were needed.

The maintenance and operation of the system is relatively simple. At the present time, the person who did the original programming runs the system once a month when the month's data are provided by the agency.

Minor adjustments to the present system continue to be made, particularly when a new phase of operation begins, such as outputting raw data for analysis on statistical programs.

When the system is fully operational there will be a need for two things from a computing facility. One is a computer to run the system. Another is technical assistance when the facility makes changes in the operating system, which in turn require changes in existing programs. It is assumed that these will continue to be available.

The system has been designed for ease of transfer to other facilities. The specific difficulties anticipated in making such a transfer are the following:

1. Adaptation of the information forms from which the new data is put into the system.
2. Adaptation of output to meet a new agency's needs.
3. Adaptation of certain aspects of the programs to make them compatible with a different computer.

It is difficult to gauge the magnitude of these difficulties until there has been experience with such a transfer.

VII. COMPARISON WITH OTHER SYSTEMS

A question raised from several quarters concerns the comparability of the LARC System to other social service information systems. A review of published information on computerized client information systems was conducted. The study included systems which pertained to social service delivery, but was not limited to those of rehabilitation agencies. Eyman and Committee, published in 1968, (17, p. 359) reported that "most agencies that reported having data are centralized State departments . . ." The present review indicated that the situation is still essentially the same. Six systems reviewed (1, 2, 4, 5, 6, 9) are basically for data storage and reporting. Characteristically, information on the total client population of participating agencies is forwarded to a central site where it is transcribed into machine readable form and processed. Statistical reports are then compiled and feedback provided to the agencies. Such systems cannot be used for "case management" since individual client records are not computerized. Their purpose is to provide data for decision-making, generally as Eyman et. al. noted, at the State or Federal level.

Another classification of systems indicated by the literature includes those which provide interactive retrieval capabilities. These systems utilize remote computer terminals which access client files to provide staff members with requested client information. Reid (16) envisions this type of system being in wide use during the 1980's. At present, their use is limited to base hospitals or institutions because of their cost of operation and the sophistication of equipment required. Only one of the systems (13) reviewed was described as being primarily interactive. Ideally, interactive systems would be interfaced with statistical reporting packages which periodically produce tables and summaries.

The manner in which systems recorded the delivery of services varied. Several systems (2, 5, 9) simply recorded whether or not specific treatments were offered. Others used such indices as total cost of services offered (4), number of hours (3) and number of sessions (7). Typically, between 5 and 15 categories of services (or treatment) were defined.

Evaluation was also subject to a wide variety of interpretations. One procedure was to link evaluation with type of treatment and include a rating of effectiveness of treatment (7, 9). For two of the centralized data banks (1, 2), evaluative indices were defined in readily quantifiable terms; e.g. number of clients treated, number of clients released and value of goods and services distributed. Two other data banks (3, 5) did record client status on a wide assortment of dimensions. However, it was not evident that "progress" could be determined by subsequent update of client status.

It is not possible to compare fully the LARC System with others. Information which would be vital to such comparisons is not readily available and when requested has not been forthcoming. For example, cost of implementation, total information storage capacity, and format for input and output are usually not disclosed. However, an even more important question is the effectiveness of the system in actual operation. It is necessary to gauge the accuracy of the information on file, the utility of the system for staff and administration, and the real cost of ongoing operation, in terms of person hours and software expenses. System promoters do not have or are reluctant to make the relevant figures available.

The total client background information file for the LARC System is 55% larger than that of any other data system analyzed. The potential for adding up to 150 items of experimental ratings for each client gives the LARC System a flexibility not reported for other systems. This capacity will be especially useful in conducting specific evaluations of special treatment techniques or new programs.

Generally, comparison with other systems suggests that the LARC System fares relatively well both in its technical capability and its operational efficiency. However, it is important to repeat that the present review involved the use of less than adequate information.

VIII. SYSTEM REVISIONS

A. A program oriented evaluation system

There is in the planning stage a revised version of the computer programs described above. This revision will allow for still more flexibility and make the system even more readily usable in other agencies. The basic feature of the revised system is the ability to follow a client from one program to another in an agency. The key to this capability is identifying a client's status from the beginning of a programmatic phase to the end. This takes into account not only the amount and type of service provided to a client (as the present system does) but also the different combinations or programs of services. Thus, either a type of service or a combination of services can be related to a client's progress. Specifications for these revisions are nearing completion and it is anticipated that programming will begin shortly.

B. Interfacing with a fiscal accounting system

As noted above, the question of undertaking cost-benefit analyses using the LARC System is often raised. In designing the system this possibility was apparent and the system was designed with the potential for implementing a fifth sub-system to contain relevant fiscal data. However, the most serious lack at that time was felt to be an adequate accounting of services provided to each client. Without such information determining of the cost of some unit of service was not possible. Furthermore, the cost of achieving some specified degree of progress could not be considered until some method of indexing progress was available. By contrast, it was felt that the fiscal data that was available was relatively adequate and would only need to be introduced into the system as a separate part of sub-system.

An effort is currently underway to expand the system to include fiscal data. This work is being conducted by an economist with the objective being eventually to conduct cost-benefit analyses. A proposal for funding to carry out this project is currently being prepared. Also, the revisions of the current system are being made with this objective in mind.

IX. SPECIAL STUDIES CONDUCTED OR UNDERWAY

A. Privacy - confidentiality

The issue of privacy/confidentiality has been an object of concern from the outset of the present work. A paper by James S. Green, entitled "Some Questions Relating to Privacy and Confidentiality in Social Service Agency Information Systems" was prepared on this topic for the project. This paper has provided both a basis for discussion of these issues and a point of departure in implementing the key points from these discussions.

B. Relevance as a management information system

The issue of managing a social service information system was examined in a dissertation written by Dr. Lynne Holt, entitled, "A Systems Engineering Approach to Evaluation." As a result of this work, there appears to be a number of implications for social service agency practice to be drawn from work with management information systems.

C. Establishing the cost of service delivery

Using available service accounting data, a study was done to determine the cost of evaluation services at LARC. A detailed history of services received was generated for specified clients. This was broken down into finer detail than the service accounting roster provided. It depicted service received by a client according to category, type, delivering staff member, month of receipt, hours of service, and number of times delivered. This analysis was used for determining service costs for clients entering under special funding programs and for estimating service ratios applicable to the service accounting system. Further study of this type of issue is planned.

D. Study of social service agency need for information

Using results of a survey conducted by Donald Jolly, M.D. a comparison was made of agency staff and administration needs for information and information provided by the LARC System. A report of this study is in preparation.

E. Study of progress evaluation ratings

In conjunction with a review of the evaluation dimensions, current evaluation ratings and ratings of goals were subjected to several types of statistical analyses. The intent was to determine the psychometric properties of the evaluation items and to discover by means of factor analysis the underlying factors or sub-scales. The results of this study are being prepared in two documents; one for children and the other for adults.

F. Study of progress evaluation measures

A study of measures applicable to the measurement of progress was undertaken. This study is shortly to be expanded and a report prepared.

G. Study of service accounting data

A review of service accounting data is currently underway. Attention is being given to different approaches to analyzing this data and to the types of questions such data can provide answers. A report of this study is in preparation.

H. Statistical analysis of background information.

Statistical analyses (cross tabulations) of each background variable have been completed. A full year's data (1974-1975) have been examined in these analyses. Separate analyses were done for the adult's and children's programs. A report of these analyses is nearing completion.

X. FUTURE PLANS FOR USE OF THE SYSTEM

In the future there will be efforts both to expand and intensify its use in agency activity and to develop research which can be done with information in the system. The revision of the computer programs will make it possible to expand use of the system to other agencies and/or social service programs. This revision is currently underway with several other agencies at different stages in implementing the system. The effort that is underway to incorporate fiscal data in the system will open the way to serious exploration of cost-benefit analysis.

As noted above, the application of the system in a coordinated program run by five agencies is being developed and its application in other programs is being explored. There is considerable potential for developing the utilization of the system to its fullest by these additional applications.

XI.. WORKING DOCUMENTS DEVELOPED ON THE LARC SYSTEM

James S. Green: "Some Questions Relating to Privacy and Confidentiality
in Social Service Agency Information Systems" prepared for the LARC
System project, Center for Social Research, Lehigh University, 1973.

Lynne Holt: "A Systems Engineering Approach to Evaluation" dissertation
presented in partial fulfillment of requirements for a Ph.D., Department
of Industrial Engineering, Lehigh University, 1974.

R. C. Herrenkohl, et. al.: Manual for use of the LARC System at the Lehigh
Valley Association for Retarded Children, 1975.

XII. REFERENCES

A. Reports on systems or projects *

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2. Statistical Reporting Procedure: Pennsylvania Mental Hospitals Department of Public Welfare.
3. Mental Retardation Resident Survey: New York, Department of Mental Hygiene.
4. Reciprocal Rehabilitation Reporting System: U.S. Department of H.E.W.
5. Individualized Data Base System: Neuropsychiatric Institute, Pacific State Hospital Research Group.
6. Joint Data Collection Project: Western Interstate Commission for Higher Education.
7. Rehabilitation Program: Hospital Utilization Project.
8. Data Relevancy Study: Office of Mental Retardation; Bureau of Research and Training.
9. Interax: System in use by Northampton County Mental Health/Mental Retardation.
10. Child Abuse Record and Evaluation System: American Data Systems.
11. Computer Assisted Placement Service: Medical Datamation
12. Human Services Information System: Human Services Committee of Greater Bethlehem Area.
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15. Weiss, C., Evaluation Research, Prentice-Hall, Englewood Cliffs, New Jersey, 1972.
16. Reid, W. J., Developments in the use of organized data, Social Work, 1974, 585-593.

* The information available on systems or projects cited here are at best sketchy. No systematic search has been made and no concerted effort has been made to gather more details on the references cited above, often with citations incomplete. However, such an undertaking is planned for early in 1976.

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